Computer Program Listing Appendix A

1 Text string resources used for expert system:

2 Project/Fabric Strings:

3   IDS_PROJECT   "No Project type selected."

4   IDS_COTTON   "Ordinary cotton, polyester, or blends embroider easily."

5   **IDS_COTTON/POLYESTER   "Ordinary cotton, polyester, or blends embroider easily. If you are working with a heavy weight, also**

6 **check out the instruction for Canvas/Denim. Since this category covers a broad range of fabrics, let's just add that you don't want to stretch**

7 **the fabric itself. this will cause compensation problems; your colors may not register well. Always try to get the fabric stable before hooping**

8 **it to eliminate this problem. When hooping, remember to make sure the fabric is 'drum tight'."**

9   IDS_CANVAS/DENIM   "Canvas and denim are generally easy to embroider and don't require a lot of stabilizer."

10   IDS_FLEECE   "Fleece is wonderful to embroider."

11   IDS_HATS   "Hats that are structured have stabilizer built-in. You may not have to use much stabilizer. The trouble is hooping; the hat

12   won't press into the frame easily. Alignment takes practice."

13   IDS_HATU   "Hats that are not structured require a little extra stabilization. They are less difficult to embroider than structured hats, but

14   can still be difficult."

15   IDS_HOSIERY   "Hosiery, stockings, etc., can be embroidered! This project is unusual because we actually stretch the material for a change!

16   Be very careful not to get other parts of the stocking caught! (It will probably happen the first time you try this type of

17   embroidery.)"

18   IDS_JERSEY   "Sweatshirt or jersey material can be difficult because of its tendency to shrink under the tension of embroidery. Due to

19   this, stabilization is very important. Do not attempt to pull the fabric tight in the hoop as this makes the problem very bad.

20   Just make sure that the stabilizer is hooped tightly, with the fabric adhered to it in a 'relaxed' state."

21   IDS_LACE   "Using lace designs is easy if you use a net or tulle as a foundation and some water-soluble stabilizer adhered well to it. You

22   may want to use self-adhesive water-soluble stabilizer. If you do, hoop the stabilizer, expose some of the sticky area, and

23   press the net onto it."

24   IDS_LEATHER   "Leather is fairly stable, but will stretch as you hoop it, therefore use an iron-on stabilizer. Split leather (garment-weight)

25   will fit into your hoop. Some leathers, however, are too heavy."

26   IDS_LINEN   "Linen sews out like most cotton or polyester fabrics, however it typically is a loose weave, so be careful not to stretch the

27   fabric, particularly on the bias."

28   IDS_LYCRA   "Lycra and other 'super-stretch' fabrics can be surprisingly easy. The difficulty lies in approximating the amount of stretch

29   the fabric will endure, because that's the amount of stretch that gets applied during the hooping process."

30   IDS_METAL   "Metal work or copper-punch is neat if you have a design digitized for it. Remember that every 'stitch' will leave a hole

31   when you are digitizing for this process. Since it is unlikely that your metal plate will be hoop-able, put some self-adhesive

32   stabilizer in the hoop and expose just enough stickiness to be sure that your metal won't shift. When you're done, release the

33   stabilizer from the hoop and have some solvent on hand to remove the adhesive that's left behind. If you do this carefully,

34   you'll have no bends in your metal!"

35   IDS_MICROTEX   "We've been seeing these high-density fabrics recently, and they have their uses, but you must first remember that they have

36   needle problems: Use a sharp (microtex) needle. In a pinch, a leather or denim needle will do."

37   IDS_QUILTED   "Quilted material is easy to embroider because in a sense it is already stable. One thing is important though; use a tear-away

38   stabilizer on the back so that the texture of the back won't snag as it embroiders."

39   IDS_SATIN   "Satin sews easily and is easily stabilized. The real difficulty is hooping this fabric (it can be very slippery). If your satin is

40   made of acetate, remember that water will leave spots, so we don't advise water-soluble stabilizer, and check your iron/press

41   before pressing."

42   IDS_PIQUE   "The typical sports shirt is made of a very breathable fabric known as a pique knit. This fabric also moves easily over the

43   body. What this also means is that it will pull-in after embroidering if you're not careful! Although it is not likely to stretch

44   much, pique knit wants to be treated as if it would. Relax the fabric as much as possible before stabilizing. You may also

45   want to lower your tension slightly (Only slightly). If you have a bunch of shirts to do, practice on a sample first. "

46   IDS_SILK   "Silk is wonderful to embroider, but use a sharp (microtex) needle. Be careful not to stretch on the bias when tightening the

47   hoop."

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48	IDS_BATH	"Bath towels are very heavy, the result of which is that designs may lose some detail. However, towels are fairly easy to
49		embroider. You can even make a two-sided towel by matching your bobbin thread. Hoop a heavy water-soluble, then use
50		spray-adhesive to attach the towel to the stabilizer. "
51	IDS_HAND	"Hand towels are less heavy than bath towel, and the odds are that you can hoop it."
52	IDS_VELVET	"Velvet can be difficult, but yields wonderful results! Test to see if hooping your velvet will crush it. Also test for water-
53		marks, if you're inclined to use a water-soluble stabilizer on top to stabilize the nap of the fabric. "
54	IDS_VINYL	"Vinyl can be embroidered, but the catch is to use a good stabilizer underneath. The reason is that vinyl can be literally
55		cut-out if the density of the stitches is high. By using a good cut-away, or perhaps even another layer of fabric, you will
56		actually be sewing the vinyl onto the underlaying material, which helps a lot. Use a leather needle (jeans needle in a pinch)
57		to keep the holes as small as possible."
58	IDS_WOOL	"Wool is wonderful to embroider, but be careful if it has a pile or a stretch. Wools today are blended with many other
59		fabrics, so this will require some attention."

60 General Purpose String resources:

61	IDS_NEEDLEINFO	"\r\n\r\nThe following are my needle recommendations:\r\n"
62	IDS_HOOPINFO	"\r\n\r\nThe following are my hooping recommendations:\r\n"
63	IDS_STABILIZERINFO	"\r\n\r\nThe following are my stabilizer recommendations:\r\n"
64	IDS_STANDARD	"No stock answer"

65 Hooping resources:

66	IDS_NOHOOP	"Tightly hoop a self-adhesive tear-away stabilizer without removing the lining paper. Use a sharp knife or seam ripper to
67		score a large section of the lining paper and peel it away, exposing the sticky surface. Carefully press your fabric into
68		position. The more times you have to try to re-align it, the less sticky stuff you'll have "
69	IDS_NOHOOPSOLVY	"Add a layer of water-soluble stabilizer to the top of the fabric. You may want to use a little spray adhesive to hold it in
70		place."
71	IDS_NOHOOPBASTE	"With your design stabilized, embroider a basting stitch to help further anchor the stabilizer and fabric together. To create a
72		basting stitch, use the 'Auto Baste' feature in Designer's Gallery."

73 Stabilization resources:

74	IDS_NOWATER	"Be careful using water-soluble stabilizer on this fabric. Test thoroughly!"
75	IDS_NOHEAT	"If you use a stabilizer that dissolves with heat, be careful. If there is any nylon in your fabric, you must keep the heat low."
76	IDS_NORMAL	"Use a self-adhesive tear away stabilizer, cut big enough to fit the hoop."
77	IDS_IRONON	"Or, better yet, use an iron-on stabilizer."
78	IDS_CUTAWAY	"Or, better still, use a cut-away stabilizer."
79	**IDS_TEARAWAY**	**"Or, better still, use a tear-away stabilizer."**
80	IDS_HEAVYSOLVY	"Also add a layer of heavy water-soluble stabilizer to the top (Some of these are now available as self-adhesive
81	too!)"	
82	IDS_CLEARMELT	"A handy alternative to water-soluble stabilizers are those that 'melt' away with heat."
83	IDS_MODSTRETCH	"Since you have increased the stretch setting, it is probable that you want to use a better-adhered stabilizer. Also, remember
84		to tighten the stabilizer, not the fabric, in the hoop."

85 Other String Resources:

86	IDS_RETURN	"\r\n"
87	IDS_MODSTRETCHNONE	"Hypothetical question: How does that exist without stretch?"
88	IDS_MODSTRETCHMETAL	"By the way, how does metal have stretch?"

89 Needle and Thread String resources:

90	NDL_LEATHER	"Needle: Leather, size 14"
91	NDL_JEANS	"Needle: Jeans, size 14"
92	NDL_EMBROIDERY	"Needle: Embroidery, size 14"
93	**NDL_EMBROIDERY**	**"Needle: Embroidery, size 11-12"**
94	NDL_EMBSMALL	"Needle: Embroidery, size 11"
95	NDL_STRETCH	"Needle: Stretch, size 12"
96	NDL_UNIBIG	"Needle: Universal, size 18"

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```
 97      NDL_MICROTEX      "Needle: Microtex, size 11-12"
 98      IDS_40WT              "Thread: 40wt."
 99      IDS_35WT              "Thread: 35wt."
100      IDS_30WT              "Thread: 30wt."
101      IDS_50WT              "Thread: 50wt."
102      IDS_NOTHREAD          "No Thread"
103  Project String table indexes
104      IDS_SETTING        "No setting"
105      IDS_SCOTTON        "000"
106      IDS_SCANVAS        "340"
107      IDS_SFLEECE        "311"
108      IDS_SHATS          "340"
109      IDS_SHAT           "300"
110      IDS_SHOSIERY       "222"
111      IDS_SJERSEY        "011"
112      IDS_SLACE          "221"
113      IDS_SLEATHER       "351"
114      IDS_SLINEN         "110"
115      IDS_SLYCRA         "142"
116      IDS_SMETAL         "450"
117      IDS_SMICROTEX      "150"
118      IDS_SQUILTED       "400"
119      IDS_SSATIN         "100"
120      IDS_SPIQUE         "111"
121      IDS_SSILK          "140"
122      IDS_SBATH          "440"
123      IDS_SHAND          "340"
124      IDS_SVELVET        "341"
125      IDS_SVINYL         "450"
126      IDS_SWOOL          "340"
127  void CStabAdvDlg::Recommend()
128  {    // Start with a clean slate:
129          rec = "";
130      recList.RemoveAll();
131      // Display info on project.
132  Sample Code Functions for Analysis Software
133      recList.AddTail(RecList(IDS_COTTON + m_project));
134      // Create the MustBePriorTo list.
135      // Create the MustFollow list.
136      // Add the needle and thread recommendations
137      if(IsInList(IDS_COTTON)) { m_needle.LoadString(NDL_EMBROIDERY);      m_thread.LoadString(IDS_40WT); }
138      if(IsInList(IDS_CANVAS)) { m_needle.LoadString(NDL_JEANS);           m_thread.LoadString(IDS_35WT); }
139      if(IsInList(IDS_FLEECE)) { m_needle.LoadString(NDL_EMBROIDERY);      m_thread.LoadString(IDS_30WT); }
140      if(IsInList(IDS_HATS)) { m_needle.LoadString(NDL_EMBROIDERY);        m_thread.LoadString(IDS_40WT); }
141      if(IsInList(IDS_HATU)) { m_needle.LoadString(NDL_EMBROIDERY);        m_thread.LoadString(IDS_40WT); }
142      if(IsInList(IDS_HOSIERY)) { m_needle.LoadString(NDL_EMBSMALL);       m_thread.LoadString(IDS_40WT); }
143      if(IsInList(IDS_JERSEY)) { m_needle.LoadString(NDL_STRETCH);         m_thread.LoadString(IDS_40WT); }
144      if(IsInList(IDS_LACE)) { m_needle.LoadString(NDL_EMBROIDERY);        m_thread.LoadString(IDS_35WT); }
145      if(IsInList(IDS_LEATHER)) { m_needle.LoadString(NDL_LEATHER);        m_thread.LoadString(IDS_30WT); }
```

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```
146    if(IsInList(IDS_LINEN)) { m_needle.LoadString(NDL_EMBROIDERY);        m_thread LoadString(IDS_40WT); }
147    if(IsInList(IDS_LYCRA)) { m_needle.LoadString(NDL_EMBROIDERY);        m_thread.LoadString(IDS_40WT); }
148    if(IsInList(IDS_METAL)) { m_needle.LoadString(NDL_UNIBIG);            m_thread.LoadString(IDS_NOTHREAD); }
149    if(IsInList(IDS_MICROTEX)) { m_needle.LoadString(NDL_MICROTEX);       m_thread.LoadString(IDS_50WT); }
150    if(IsInList(IDS_QUILTED)) { m_needle.LoadString(NDL_EMBROIDERY);      m_thread.LoadString(IDS_40WT); }
151    if(IsInList(IDS_SATIN)) { m_needle.LoadString(NDL_MICROTEX);          m_thread.LoadString(IDS_40WT); }
152    if(IsInList(IDS_PIQUE)) { m_needle.LoadString(NDL_EMBROIDERY);        m_thread.LoadString(IDS_40WT); }
153    if(IsInList(IDS_SILK)) { m_needle.LoadString(NDL_MICROTEX);           m_thread.LoadString(IDS_50WT); }
154    if(IsInList(IDS_BATH)) { m_needle.LoadString(NDL_JEANS);              m_thread.LoadString(IDS_30WT); }
155    if(IsInList(IDS_HAND)) { m_needle.LoadString(NDL_EMBROIDERY);         m_thread.LoadString(IDS_35WT); }
156    if(IsInList(IDS_VELVET)) { m_needle.LoadString(NDL_EMBROIDERY);       m_thread.LoadString(IDS_40WT); }
157    if(IsInList(IDS_VINYL)) { m_needle.LoadString(NDL_LEATHER),           m_thread.LoadString(IDS_30WT); }
158    if(IsInList(IDS_WOOL)) { m_needle.LoadString(NDL_EMBROIDERY);         m_thread.LoadString(IDS_35WT), }
159    // Create the stabilzer advise
160    if(!recList.IsEmpty())
161    {                    //recList.AddTail(RecList(IDS_STABILIZERINFO));
162                         if(IsInList(IDS_COTTON)) recList.AddTail(RecList(IDS_NORMAL));
163                         if(IsInList(IDS_COTTON/POLYESTER)) recList.AddTail(RecList(IDS_NORMAL));
164                         if(IsInList(IDS_CANVAS)) recList.AddTail(RecList(IDS_NORMAL));
165                         if(IsInList(IDS_FLEECE)) recList.AddTail(RecList(IDS_NORMAL));
166                         if(IsInList(IDS_HATS)) recList.AddTail(RecList(IDS_NOHOOP));
167                         if(IsInList(IDS_HATU)) recList.AddTail(RecList(IDS_NOHOOP));
168                         if(IsInList(IDS_HOSIERY)) recList.AddTail(RecList(IDS_NOHOOP));
169                         if(IsInList(IDS_JERSEY))
170                         {    recList.AddTail(RecList(IDS_NORMAL));
171                              recList.AddTail(RecList(IDS_CUTAWAY));                }
172                         //if(IsInList(IDS_LACE)) recList.AddTail(RecList(IDS_NORMAL));
173                         if(IsInList(IDS_LEATHER)) recList.AddTail(RecList(IDS_NOHOOP));
174                         if(IsInList(IDS_LINEN))
175                         {    recList.AddTail(RecList(IDS_NORMAL));
176                              recList.AddTail(RecList(IDS_IRONON));                 }
177                         if(IsInList(IDS_LYCRA))
178                         {    recList.AddTail(RecList(IDS_NORMAL));
179                              recList.AddTail(RecList(IDS_NOHOOPBASTE));
180                              recList.AddTail(RecList(IDS_NOHEAT));                 }
181                         //if(IsInList(IDS_METAL)) recList.AddTail(RecList(IDS_NORMAL));
182                         if(IsInList(IDS_MICROTEX)) recList.AddTail(RecList(IDS_NORMAL));
183                         if(IsInList(IDS_QUILTED)) recList.AddTail(RecList(IDS_NORMAL));
184                         if(IsInList(IDS_SATIN))
185                         {    recList.AddTail(RecList(IDS_CLEARMELT));
186                              recList.AddTail(RecList(IDS_NORMAL));
187                              recList.AddTail(RecList(IDS_IRONON));                      }
188                         if(IsInList(IDS_PIQUE))
189                         {    recList.AddTail(RecList(IDS_NORMAL));
190                              recList.AddTail(RecList(IDS_CUTAWAY));
191                              recList.AddTail(RecList(IDS_HEAVYSOLVY));
192                              recList.AddTail(RecList(IDS_NOHOOPBASTE));        }
193                         if(IsInList(IDS_SILK)) recList.AddTail(RecList(IDS_NORMAL));
194                         if(IsInList(IDS_BATH))
```

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```
195                     {    recList.AddTail(RecList(IDS_NOHOOPSOLVY));
196                          recList.AddTail(RecList(IDS_NOHOOPBASTE));    }
197                  if(IsInList(IDS_HAND))
198                     {    recList.AddTail(RecList(IDS_NORMAL));
199                          recList.AddTail(RecList(IDS_NOHOOPSOLVY));
200                          recList.AddTail(RecList(IDS_NOHOOPBASTE));    }
201                  if(IsInList(IDS_VELVET))
202                     {    recList.AddTail(RecList(IDS_CLEARMELT));
203                          recList.AddTail(RecList(IDS_NOHEAT));
204                          recList.AddTail(RecList(IDS_NORMAL));             }
205                  //if(IsInList(IDS_VINYL)) recList.AddTail(RecList(IDS_NORMAL));
206                  if(IsInList(IDS_WOOL))
207                     {    recList.AddTail(RecList(IDS_NORMAL));
208                          recList.AddTail(RecList(IDS_NOHOOPSOLVY));    }
209      }             // if(!recList.IsEmpty())
210  // Create the stabilizer MustBePriorTo list.
211  // Create the stabilizer MustFollow list.
212  Sample Code Function for Operator Parameter Selection
213  // Use rules to modify based on users changing settings.
214  if(!IsInList(IDS_METAL) && (tStretch < m_stretch)) // Stretch increased
215      {                    recList.AddTail(RecList(IDS_RETURN));
216                           recList.AddTail(RecList(IDS_RETURN));
217                           recList.AddTail(RecList(IDS_MODSTRETCH));
218      }
219  if(IsInList(IDS_COTTON))
220      {                    if(m_thickness > 2) m_needle.LoadString(NDL_JEANS); }
221  if(IsInList(IDS_COTTON/POLYESTER))
222      {                    if(m_thickness > 2) m_needle.LoadString(NDL_JEANS);    }
223  if(IsInList(IDS_CANVAS))
224      {                    if(m_thickness < 3) m_needle.LoadString(NDL_EMBROIDERY);    }
225  if(IsInList(IDS_FLEECE))
226      { }
227  if(IsInList(IDS_HATS))
228      { }
229  if(IsInList(IDS_HATU))
230      { }
231  if(IsInList(IDS_HOSIERY))
232      {                    if(!m_stretch)
233          {    recList.AddTail(RecList(IDS_RETURN));
234               recList.AddTail(RecList(IDS_RETURN));
235               recList.AddTail(RecList(IDS_MODSTRETCHNONE)),
236          }
237      }
238  if(IsInList(IDS_JERSEY))
239      { }
240  if(IsInList(IDS_LACE))
241      { }
242  if(IsInList(IDS_LEATHER))
243      { }
```

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```
244    if(IsInList(IDS_LINEN))
245    { }
246    if(IsInList(IDS_LYCRA))
247    {                    if(!m_stretch)
248                         {    recList.AddTail(RecList(IDS_RETURN));
249                              recList.AddTail(RecList(IDS_RETURN));
250                              recList.AddTail(RecList(IDS_MODSTRETCHNONE)),
251                         }
252    }
253    if(IsInList(IDS_METAL))
254    {                    if(m_stretch)
255                         {    recList.AddTail(RecList(IDS_RETURN));
256                              recList.AddTail(RecList(IDS_RETURN));
257                              recList.AddTail(RecList(IDS_MODSTRETCHMETAL));
258                         }
259    }
260    if(IsInList(IDS_MICROTEX))
261    { }
262    if(IsInList(IDS_QUILTED))
263    { }
264    if(IsInList(IDS_SATIN))
265    { }
266    if(IsInList(IDS_PIQUE))
267    { }
268    if(IsInList(IDS_SILK))
269    { }
270    if(IsInList(IDS_BATH))
271    { }
272    if(IsInList(IDS_HAND))
273    { }
274    if(IsInList(IDS_VELVET))
275    { }
276    if(IsInList(IDS_VINYL))
277    { }
278    if(IsInList(IDS_WOOL))
279    { }
280    // Establish thread
281    CString temp;
282    float thread = 4;
283    temp.LoadString(IDS_35WT);
284    if(m_thread == temp) thread = 3.5;
285    temp.LoadString(IDS_30WT);
286    if(m_thread == temp) thread = 3;
287    temp.LoadString(IDS_50WT);
288    if(m_thread == temp) thread = 5;
289    display.thread = thread;
290    // Now analyze the density
291    CString analysis;
292    BEmbroideryFile ft;
```

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```
293    ft = display.file;
294    int w = (int)(((float)abs(ft.maxX - ft.minX)) * thread/11);
295    w = ((w + 1) / 2) * 2;    // DWORD align width for storage.
296    int h = (int)(((float)abs(ft.maxY - ft.minY)) * thread/11);
297    ft.width = w;
298    ft.height = h;
299    ft.RenderDensityBitmap();
300    ft.AnalyzeDensity();
301    POSITION pos = ft.densityColorList.GetHeadPosition();
302    CString a = "I have analyzed the density of your design.\r\n", b;
303    int count = 1;
304    float pct = 0;
305    while(pos)
306    {                        BEmbroideryColor col = ft.densityColorList.GetNext(pos);
307                             if(ft.densityMapSum)
308                                 pct = ((float)col.stitches) / ((float)ft.densityMapSum);
309                             b.Format("Density: %i : %6.2f\r\n", count, pct*100);
310                             a += b;
311                             count++;
312    }
313    analysis = a;
314    rec = analysis;
315    rec += "\r\n\r\n";
316    // Place the recommendation in the box.
317    pos = recList.GetHeadPosition();
318    while(pos)
319    {                        RecList r = recList.GetNext(pos);
320                             rec += r.string;
321                             if(pos && ("\n" != rec.Right(1))) rec += " ";
322    }
323    m_edit = rec;
324    UpdateData(false);
325    // Reset the display
326    display.Invalidate( );
327    }
328 END
```